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| Intelligent Customer Help Desk with Smart Document Understanding - SB24238 |
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* **project\_id: SPS\_PRO\_99**

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**PROJECT REPORT**

**1. INTRODUCTION**

1.1 OVERVIEW:

The overview of the internship and the project is to create the smart document implemented in the bot to make the better intraction.

The typical customer care chatbot can answer simple questions, such as store locations and hours, directions, and maybe even making appointments. When a question falls outside of the scope of the pre-determined question set, the option is typically to tell the customer the question isn’t valid or offer to speak to a real person.

In this project, there will be another option. If the customer question is about the operation of a device, the application shall pass the question onto Watson Discovery Service, which has been pre-loaded with the device’s owners manual. So now, instead of “Would you like to speak to a customer representative?” we can return relevant sections of the owners manual to help solve our customers’ problems.

To take it a step further, the project shall use the Smart Document Understanding feature of Watson Discovery to train it on what text in the owners manual is important and what is not. This will improve the answers returned from the queries.

1.2 PURPOSE:

To give accurate results to the customers who uses the bot to know about the information present in the large document .

For example: if I have the dought in the usage of the smart watch that I bought from the company or store. There will be the mannual provided by the company to use the watch but the mannual will be large to use .so, I will took long time to get the accurate results.Here each documents will be splitted accordingly and assistant will be trained accordingly according to the questions asked by the customers each time.

**2. LITERATURE SURVEY:**

2.1 EXISTING PROBLEM:

The existing problem in the documents is that the document size is very large like about 500 pages and above so it is very difficult to known the solution if any problem arises for an example if iam going to buy the washing machine with new technology that was came to the market recently. I bought the machine and I cam to house to fix and use it suddenly a new button was there which was not there I the old machine in such suitation I want to use the mannual provided by the company but the mannual was too large and can't able to find the accurate results.This is the problem that exist in this society.

2.2 PROPOSED SOLUTION:

The above problem can be solved by using the services provided by the ibm cloud.The special feature is found in the watson discovery which uses the SDU to scan the document with large amount of pages and the results will be showen in the watson assistant when ever each time customers ask any questions according to it the assistant will be trained.By this way we can give the accurate results for the customers.Now I can able to find the usage of the button that is present in the machine by just asking the assistant as What is the usage of the blue button?(example).

WHAT IS SDU?

SDU trains Watson Discovery to extract custom fields in your documents. Customizing how your documents are indexed into Discovery will improve the answers returned from queries.

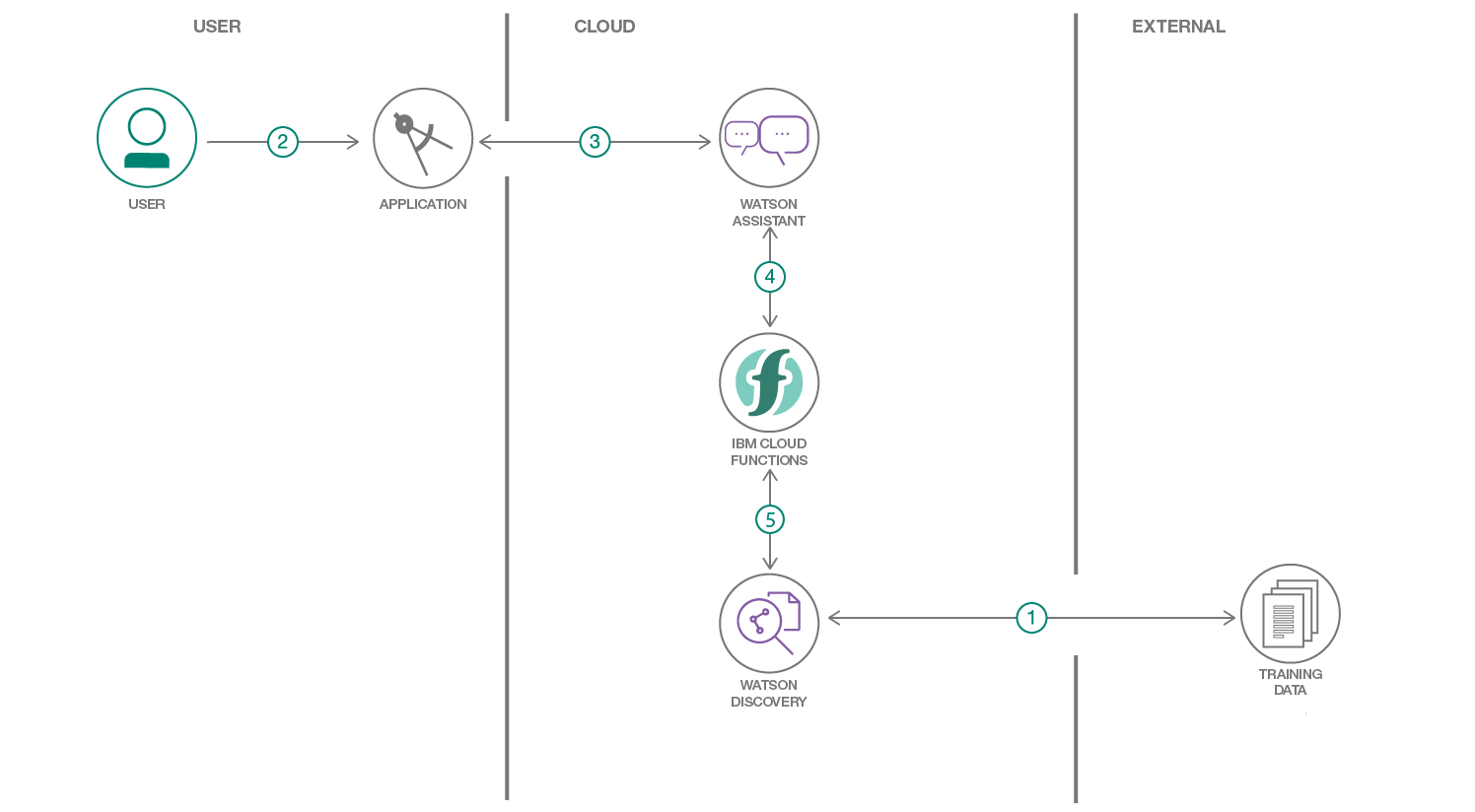
With SDU, you annotate fields within your documents to train custom conversion models. As you annotate, Watson is learning and will start predicting annotations. SDU models can also be exported and used on other collections.

Current document type support for SDU is based on your plan:

* Lite plans: PDF, Word, PowerPoint, Excel, JSON, HTML
* Advanced plans: PDF, Word, PowerPoint, Excel, PNG, TIFF, JPG, JSON, HTML

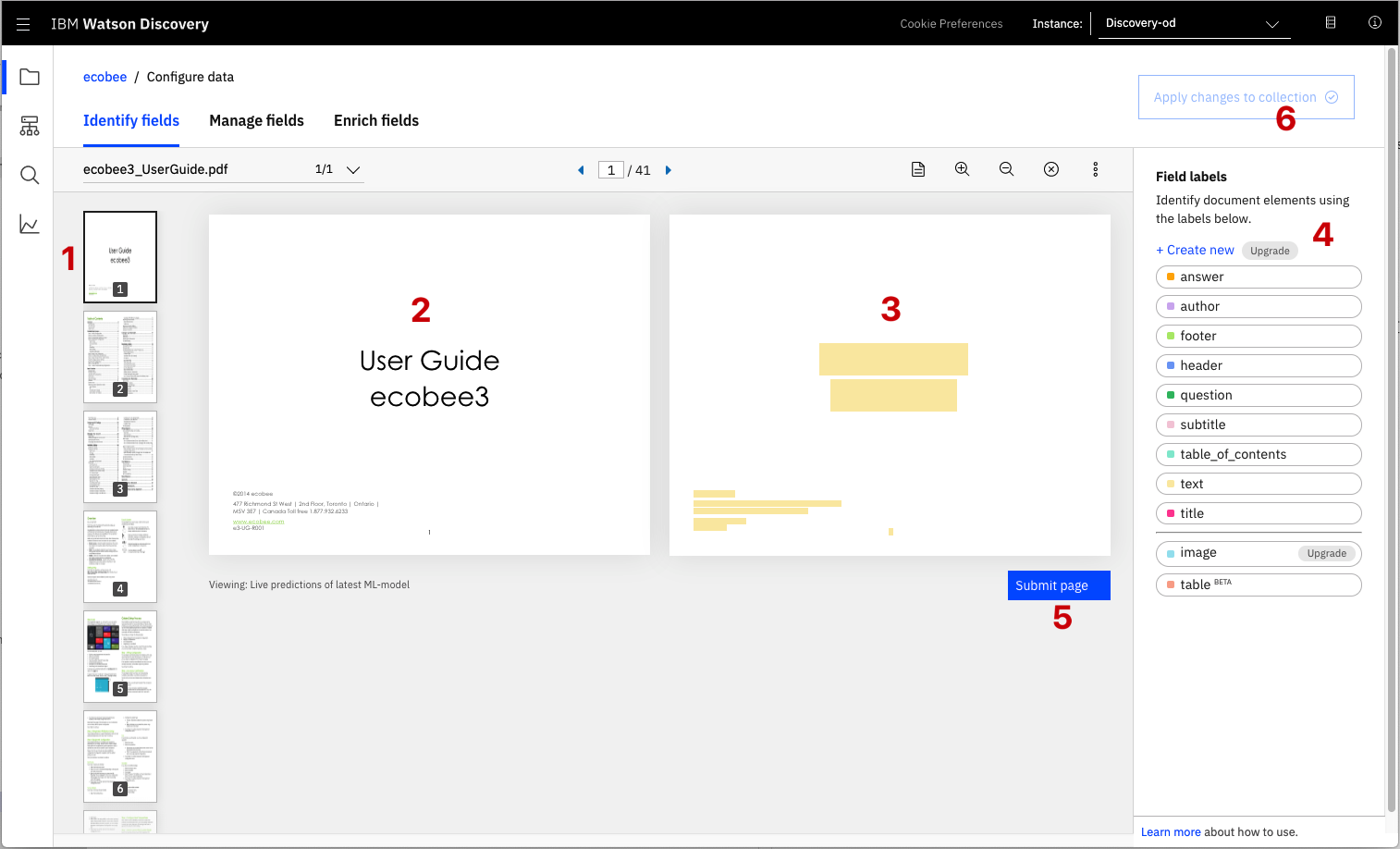
Here is a great video that provides an overview of the benefits of SDU, and a walk-through of how to apply it to your document:

3.THEORITICAL ANALYSIS:

3.1 BLOCK DIAGRAM:

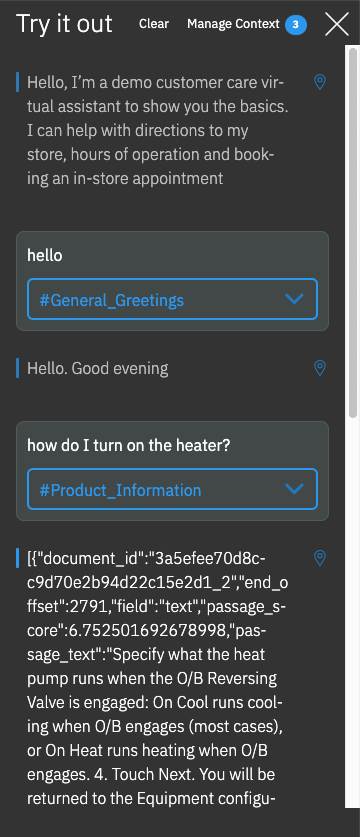
3.2 SOFTWARE DESIGNING:

The documents are scanned by the watson discovery usig the SDU technology.the below image shows the steps to do the sdu in the watson discovery.



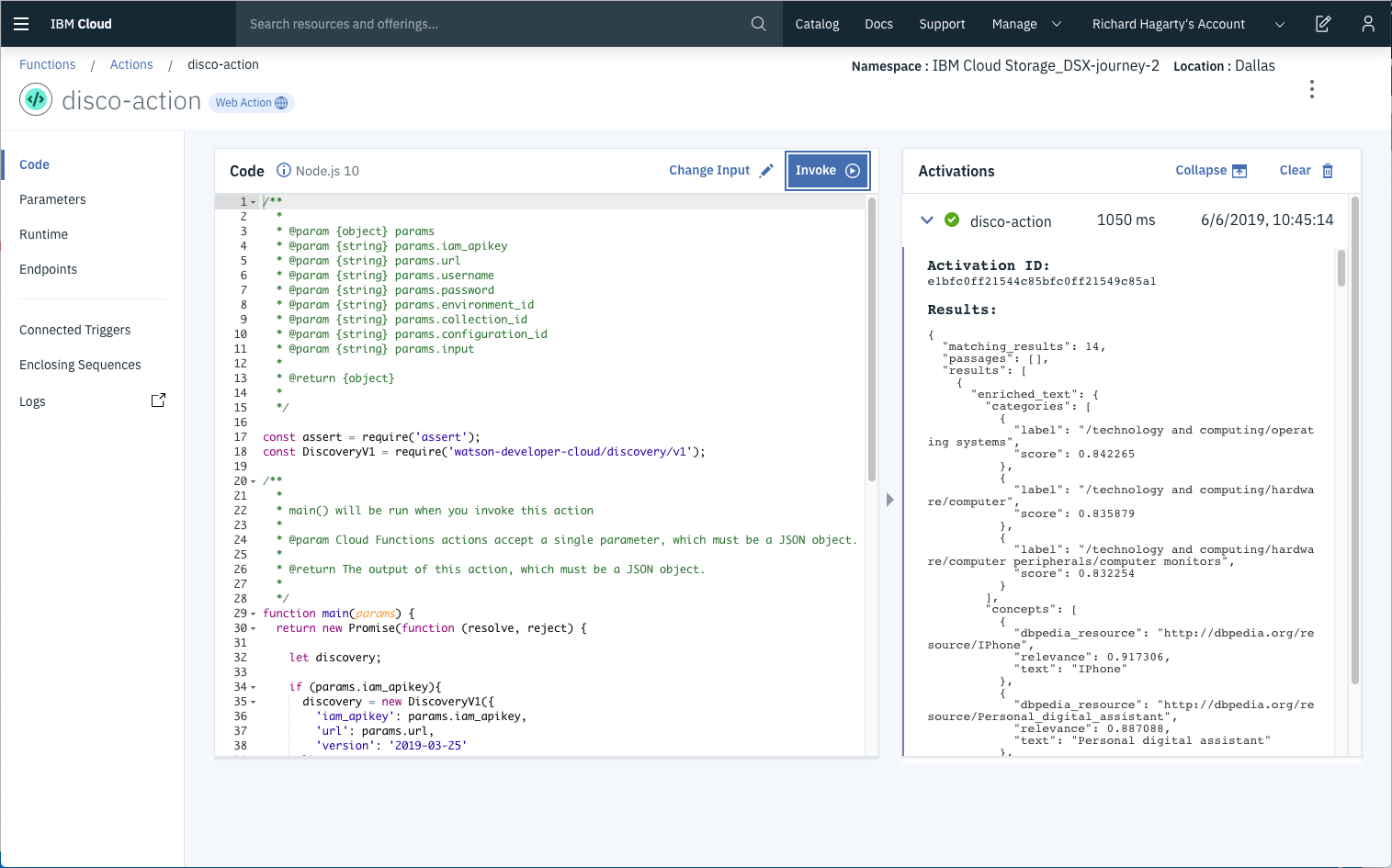
.Watson assistant dialog and skill result:

the below image shows the outcomes of the watson assistant after the setting the dialog skills for the assistant .The new intent also can be created by our own.

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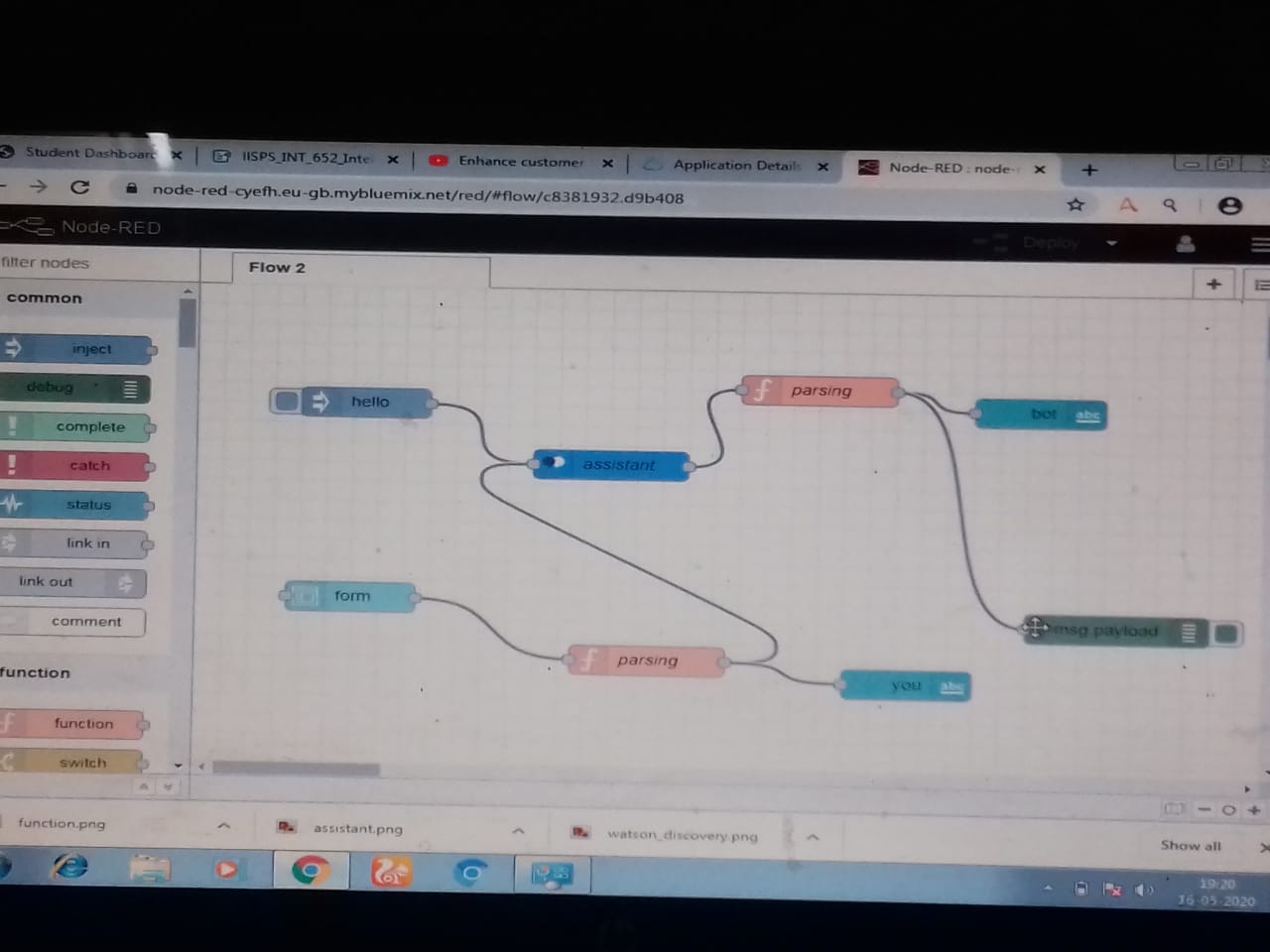
4. Functions :

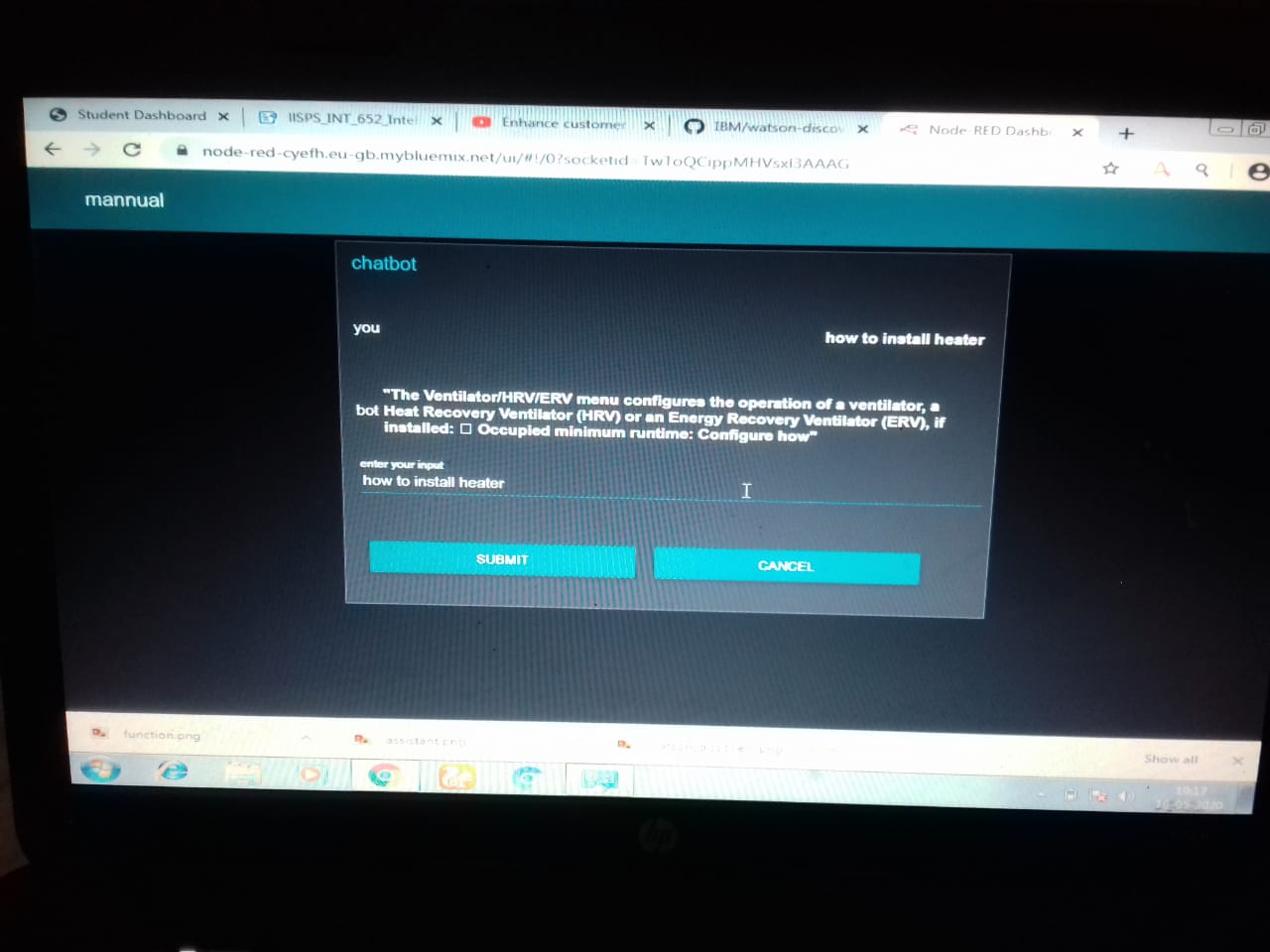
The below image shows the action and code to activate between the discovery and the assistant.



Node-red:

**Node-RED** is a programming tool for wiring together hardware devices, APIs and online services. Primarily, it is a visual tool designed for the Internet of Things, but it can also be used for other applications to very quickly assemble flows of various services. ... At present, **Node-RED** is a JS Foundation project



Assistant/Bot:

5.EXPERIMENTAL INVESTIGATION:

Using the Watson Discovery Smart Document Understanding (SDU) feature, we will enhance the Discovery model so that queries will be better focused to only search the most relevant information found in a typical owner's manual.

Using Watson Assistant, we will use a standard customer care dialog to handle a typical conversation between a custmomer and a company representitive. When a customer question involves operation of a product, the Assistant dialog will communicate with the Discovery service using a webhook.

The webhook will be created by defining a web action using IBM Cloud Functions.

## What is SDU?

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With SDU, you annotate fields within your documents to train custom conversion models. As you annotate, Watson is learning and will start predicting annotations. SDU models can also be exported and used on other collections.

Current document type support for SDU is based on your plan:

* Lite plans: PDF, Word, PowerPoint, Excel, JSON, HTML
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## Here is a great video that provides an overview of the benefits of SDU, and a walk-through of how to apply it to your document:

## What is a webhook?

A webhook is a mechanism that allows you to call out to an external program based on something happening in your program. When used in a Watson Assistant dialog skill, a webhook is triggered when the Assistant processes a node that has a webhook enabled. The webhook collects data that you specify or that you collect from the user during the conversation and save in context variables, and sends the data to the Webhook request URL as an HTTP POST request. The URL that receives the webhook is the listener. It performs a predefined action using the information that is provided by the webhook as specified in the webhook definition, and can optionally return a response.

In our example, the webhook will communicate with an IBM Cloud Functions web action, which is connected to the Watson Discovery service.

6.FLOW CHART:

IBM CLOUD ACCOUNT

Node

red

app

cloud service credentials to env ile

configure watson discovery

IBM cloud services

watson assistant

IBM cloud function action

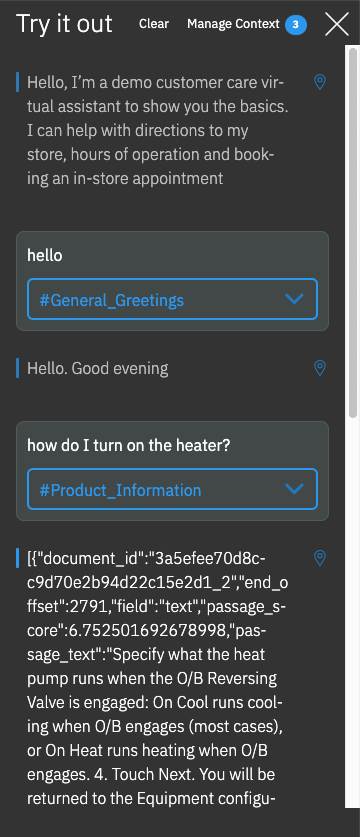
7.RESULT:

From assistant context box

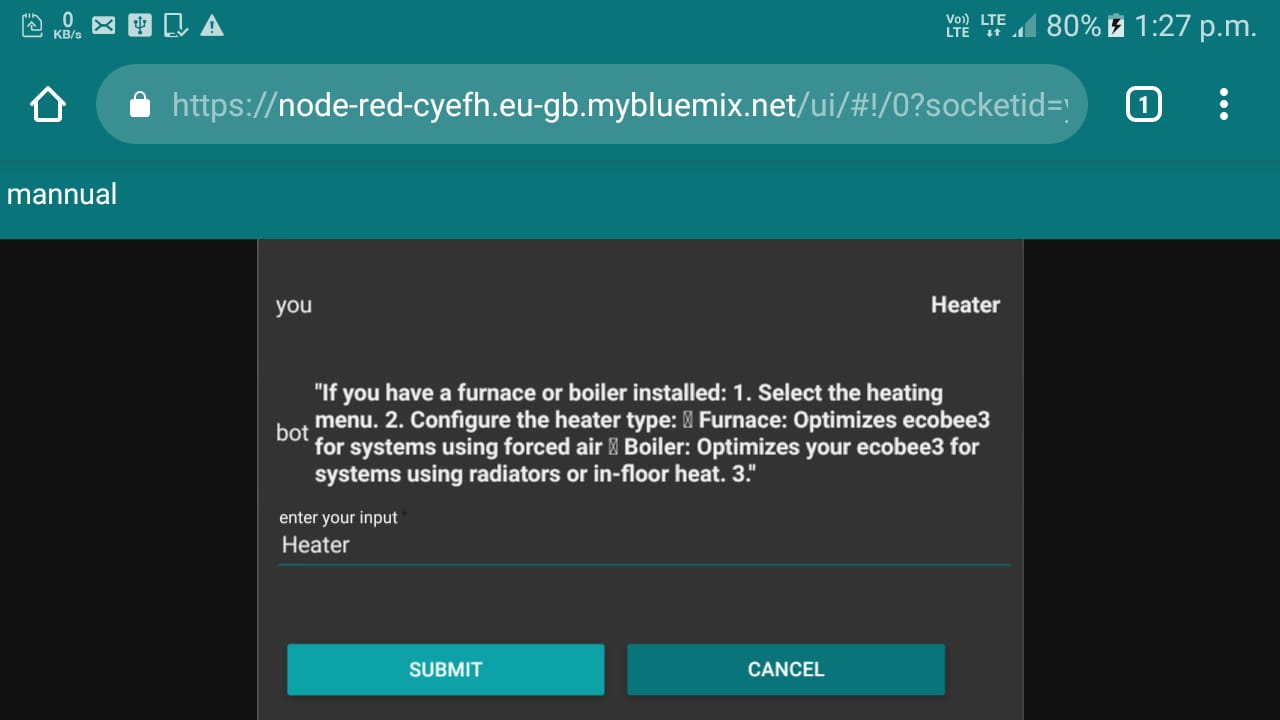
{ conversation\_id: '70bc6532-d3fb-4e4c-9083-7a1c752ba6ef',  
 system:   
 { initialized: true,  
 dialog\_stack: [ { dialog\_node: 'root' } ],  
 dialog\_turn\_counter: 3,  
 dialog\_request\_counter: 3,  
 \_node\_output\_map:  
 { node\_15\_1488295465298: [ 0 ],  
 response\_1\_1559767826196: [ 0 ] },  
 branch\_exited: true,  
 branch\_exited\_reason: 'completed' },  
 webhook\_result\_1:  
 { matching\_results: 9,  
 passages:  
 [ { document\_id: '3a5efee70d8cc9d70e2b94d22c15e2d1\_2',  
 end\_offset: 2791,  
 field: 'text',  
 passage\_score: 6.752501692678998,  
 passage\_text: 'Specify what the heat pump runs when the O/B Reversing Valve is engaged: On Cool runs cooling when O/B engages (most cases), or On Heat runs heating when O/B engages. 4. Touch Next. You will be returned to the Equipment configuration menu. Furnaces/Boilers If you have a furnace or boiler installed: 1. Select the heating menu. 2. Configure the heater type',  
 start\_offset: 2435 },

# 

8.OUTPUT FROM ASSISTANT SKILLS:



9.OUTPUT FROM ASSISTANT UI:



10, ADVANTAGES AND DISADVANTAGES:

Advantages:

1. Reduces the time for the customers.

2. Makes the better interaction with the customers

3. Easy to use

Disadvantages:  
 1. Some time the result may not be accurate.

2. It can be easly hacked with the help of API'S

3. Code is difficult to built.

APPLICATIONS:  
 1.used in Internet of things(IOT)

2. used in machine learning.

3. used to connect the bots to the website,

4. used for sentiment analysis

5. used in text to speech or speech to text conversion.

6. used in image recognition.

CONCLUSION:  
 Thus I have used the watson discovery, watson functions,watson assistant services provided by the IBM to do the smart documentation for the customer help desk.

WORK SCOPE:

* Create a customer care dialog skill in Watson Assistant
* Use Smart Document Understanding to build an enhanced Watson Discovery collection
* Create an IBM Cloud Functions web action that allows Watson Assistant to post queries to Watson Discovery
* Build a web application with integration to all these services & deploy the same on IBM Cloud Platform.

FURTURE SCOPE:  
 It reduces the work for the people and does any work in the smarter way. People can able to find the solutions easier.The data can viewed any where in the world by seeing the lap or mobile.

11.BIBILOGRAPHY:

AUTHOR:

1. Mr. RICH HAGARTY--IBM developer advocate

2. Mr. ANISH MATHUR--IBM watson offering manager

WEBSITES & SERVICES:  
 1. IBM cloud

2. Watson Discovery

3. Watson Assistant

4. Functions

5. Node-Red

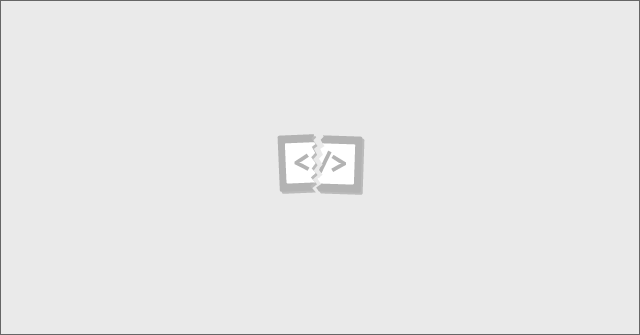
6. Google

7. Youtube vedios

12.SOURCE CODE:  
 code used in fuctions---> action

|  |  |
| --- | --- |
| /\*\* |  |
|  | \* |
|  | \* @param {object} params |
|  | \* @param {string} params.iam\_apikey |
|  | \* @param {string} params.url |
|  | \* @param {string} params.username |
|  | \* @param {string} params.password |
|  | \* @param {string} params.environment\_id |
|  | \* @param {string} params.collection\_id |
|  | \* @param {string} params.configuration\_id |
|  | \* @param {string} params.input |
|  | \* |
|  | \* @return {object} |
|  | \* |
|  | \*/ |
|  |  |
|  | const assert = require('assert'); |
|  | const DiscoveryV1 = require('watson-developer-cloud/discovery/v1'); |
|  |  |
|  | /\*\* |
|  | \* |
|  | \* main() will be run when you invoke this action |
|  | \* |
|  | \* @param Cloud Functions actions accept a single parameter, which must be a JSON object. |
|  | \* |
|  | \* @return The output of this action, which must be a JSON object. |
|  | \* |
|  | \*/ |
|  | function main(params) { |
|  | return new Promise(function (resolve, reject) { |
|  |  |
|  | let discovery; |
|  |  |
|  | if (params.iam\_apikey){ |
|  | discovery = new DiscoveryV1({ |
|  | 'iam\_apikey': params.iam\_apikey, |
|  | 'url': params.url, |
|  | 'version': '2019-03-25' |
|  | }); |
|  | } |
|  | else { |
|  | discovery = new DiscoveryV1({ |
|  | 'username': params.username, |
|  | 'password': params.password, |
|  | 'url': params.url, |
|  | 'version': '2019-03-25' |
|  | }); |
|  | } |
|  |  |
|  | discovery.query({ |
|  | 'environment\_id': params.environment\_id, |
|  | 'collection\_id': params.collection\_id, |
|  | 'natural\_language\_query': params.input, |
|  | 'passages': true, |
|  | 'count': 3, |
|  | 'passages\_count': 3 |
|  | }, function(err, data) { |
|  | if (err) { |
|  | return reject(err); |
|  | } |
|  | return resolve(data); |
|  | }); |
|  | }); |
|  | }  **13.------------------------------PROJECTSCOPE-------------------------------------------------**  The scope of the project is that it reduces the complexity of the searching.  It maintains the better interaction with the customers.  This project is done with the help of the services provided by the IBM watson:  1. WATSON DISCOVERY  2. WATSON ASSISTANT  3. FUNCTIONS  4. NODE-RED APPLICATION  **WATSON DISCOVERY:**  **Watson Discovery** is an award-winning enterprise search and AI search technology that breaks open data silos and retrieves specific answers to your questions while analyzing trends and relationships buried in enterprise data.  It also used to scan the document and it trains by itself.  WATSON ASSISTANT:  IBM **Watson Assistant** is a white label cloud service that allows enterprise-level software developers to embed an artificial intelligence (AI) virtual **assistant** (VA) in the software they are developing and brand the **assistant** as their own.It will be giving answers to the customers in better way.  FUNCTIONS:  **IBM Cloud Functions features**   * Explore an open-ended ecosystem. IBM Cloud Functions provides access to the Apache OpenWhisk ecosystem in which anyone can contribute their action **code** as building blocks to the expanding repository. * Speed and simplify development. ... * Leverage the benefits of cognitive services.   NODE-RED APPLICATION:  **Node**-**RED** provides a browser-based flow editor that makes it easy to connect devices, APIs, and online services by using the wide range of **nodes** in the palette. You can deploy the flows to the **Node**. **js** runtime environment with a single click. |

14. YOUTUBE LINK

[](https://www.youtube.com/embed/MMRJfRlmCNI)

<https://youtu.be/MMRJfRlmCNI>